

Patent Application Serial No. 09/868,090
Response to Office Action Dated September 24, 2003
Response Date December 24, 2003

This listing of claims will replace all prior versions, and
listings, of claims in the application:

Listing of Claims:

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Canceled)
16. (Canceled)
17. (Canceled)
18. (Canceled)
19. (Canceled)

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20. (Canceled)

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21. (Currently Amended) A method of loading and unloading loads in a rack storage warehouse comprising a plurality of rack bays having a plurality of rack levels, and each rack level having a plurality of rack compartments, as well as a plurality of rack aisles located between the rack bays, method of loading and unloading comprising the steps:

(a) transporting the load via a transport device in a first horizontal direction along a loading track that extends along front ends of the plurality of rack bays to a stationary vertical conveyor at a front end of a target rack bay;

(b) removing the load from the transport device;

(c) (b) depositing the load on said stationary vertical conveyor via a lifting/pushing device on said transport device;

(d) (c) transporting the load in a first vertical direction via said stationary vertical conveyor up said front end

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of said target rack bay to a target rack level;

(e) ~~(d)~~ removing the load from said stationary
vertical conveyor via a lifting/pushing device on a transport
device in one of the rack aisles at said target rack level;

(f) ~~(e)~~ transporting the load in a second
horizontal direction in the rack aisle via said transport device
movable on guiding elements associated with each individual level
of the rack bays, to a target rack compartment in said respective
target rack level;

(g) ~~(f)~~ transporting the load in a third
horizontal direction from the rack aisle into said target rack
compartment via said lifting and pushing device of said transport
device, capable of lifting the load over a small distance; and

(h) ~~(g)~~ depositing the load in said target rack
compartment via said lifting/pushing device.

22. (Currently Amended) The method according to claim 21,
wherein during the unloading of loads, steps a, b, c, d, e, f,

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and g, and h are performed accordingly in the reverse order.

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23. (Previously Presented) The method according to claim 21, wherein each transporting step, during the transport of the load is carried out at an angle of 90° from the previous transporting step.

✓
24. (Canceled)

25. (Previously Presented) The storage system according to claim 35, wherein said system for displacing the loads sideways into the racks is a lifting and pushing system.

26. (Currently Amended) The storage system according to claim 35, wherein said stationary vertical conveyors lift the loads to said transport devices on said plurality of guiding elements in said plurality of rack aisles.

27. (Previously Presented) The storage system according to claim 35, further comprising a plurality of rack elements that span said plurality of rack aisles and are secured on said plurality of rack compartments on each of said plurality of rack

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levels and comprise transverse struts, wherein said guiding elements are integrated in said plurality of rack elements.

28. (Currently Amended) The storage system according to claim 35, wherein said stationary vertical conveyors and said transport devices can be driven by means of pulling systems.

D, 29. (Previously Presented) The storage system according to claim 35, further comprising two transport devices disposed in said rack aisles, wherein said transport devices are connected with each other.

30. (Canceled)

31. (Previously Presented) The storage system according to claim 35, wherein said transport devices comprise rollers having a running surface adapted to the shape of said guiding element.

32. (Canceled)

33. (Previously Presented) The storage system according to claim 35, wherein said lifting/pushing system comprises running

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wheels in said lower zone, and wherein said lifting system acts in an upward direction so that loads can be raised against a load weight that acts on a floor of said lifting/pushing system.

D, 34. (Previously Presented) The storage system according to claim 33, wherein said lifting/pushing system further comprises a plurality of lifting bars for raising a lifting component wherein said lifting bars are disposed adjacent to said running wheels.

35. (Currently Amended) A storage system for loading and unloading loads in a rack storage warehouse comprising:

a plurality of rack bays, wherein each rack bay has a plurality of rack levels, and each rack level has a plurality of rack compartments;

a loading track that runs along front ends of said plurality of rack bays;

a plurality of rack aisles disposed between said plurality of rack bays;

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a plurality of guiding elements provided on said loading track and in said plurality of rack aisles associated with individual rack levels;

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a plurality of movable transport devices provided on said plurality of guiding elements on said loading track and in said rack aisles suitable for receiving loads;

a plurality of stationary vertical conveyors disposed at said front ends of said plurality of rack bays, having a floor that can be driven up and down; and

a lifting/pushing system for displacing the loads sideways into and out of said rack compartments and said stationary vertical conveyor, wherein said lifting and pushing system has a lower zone and is provided in conjunction with said movable transport devices.

36. (Currently Amended) A method of loading and unloading loads in a rack storage warehouse comprising a plurality of rack bays having a plurality of rack levels, and each rack level

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having a plurality of rack compartments, as well as a plurality of rack aisles located between the rack bays, method of loading and unloading comprising the steps:

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(a) transporting the load via a transport device in a first horizontal direction along a loading track that extends along front ends of the plurality of rack bays to a first stationary vertical conveyor selected from a plurality of stationary vertical conveyors at a front end of a target rack bay;

(b) removing said load from said transport device;

(c) ~~(b)~~ depositing the load on said stationary vertical conveyor via a lifting/pushing device on said transport device;

(d) ~~(c)~~ transporting the load in a first vertical direction via said first stationary vertical conveyor up said front end of said target rack bay to a target rack level;

(e) ~~(d)~~ removing the load from said stationary

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vertical conveyor via a lifting/pushing device on a transport device in one of the rack aisles at said target rack level;

(f) ~~(e)~~ transporting the load in a second horizontal direction in the rack aisle via said transport device movable on guiding elements associated with each individual level of the rack bays, to a target rack compartment in said respective target rack level;

(g) ~~(f)~~ transporting the load in a third horizontal direction from the rack aisle into said target rack compartment via said lifting and pushing device of said transport device, capable of lifting the load over a small distance;

(h) ~~(g)~~ depositing the load in said target rack compartment via said lifting/pushing device; and

(i) ~~h~~ holding a remaining set of stationary vertical conveyors taken from said plurality of stationary vertical conveyors in a waiting position so that said transport device can drive on said loading track without any obstructions up to a desired stationary vertical conveyor.

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37. (New) A storage system for loading and unloading loads in a rack storage warehouse comprising:

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a plurality of rack bays, wherein each rack bay has a plurality of rack levels, and each rack level has a plurality of rack compartments;

a loading track that runs along front ends of said plurality of rack bays;

a plurality of rack aisles disposed between said plurality of rack bays;

a plurality of guiding elements provided on said loading track and in said plurality of rack aisles associated with individual rack levels;

a plurality of movable transport devices provided on said plurality of guiding elements on said loading track and in said rack aisles suitable for receiving loads;

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a plurality of stationary vertical conveyors disposed at said front ends of said plurality of rack bays, having a floor that can be driven up and down wherein each of said plurality of stationary vertical conveyors has at least one side coupled to a corresponding rack bay and at least one side coupled to a corresponding rack aisle; and

a lifting/pushing system for displacing the loads sideways into and out of said rack compartments and said stationary vertical conveyor, wherein said lifting and pushing system has a lower zone and is provided in conjunction with said movable transport devices.
